The present response cancels claims 20-22, 40-44 and 47 without prejudice and requests reconsideration of the rejected claims. Presently, claims 1-9, 11, 12, 16, 26-29, 33-35, 39, 45, 46 and 48-61 are pending. It is not believed necessary to file a Marked Version of the present amendment canceling claims 20-22, 40-44 and 47 without prejudice.

I. Rejections under 35 USC 112, second paragraph

Claims 39 and 2-8 are rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed.

Claim 1 recites a low profile additive in a first thermosetting resin composition and it also recites a low profile additive in a second thermosetting resin composition. Claim 39, which depends from claim 1, recites the properties of "the low profile additive", as defined in the specification. See, for example, pages 5-6. Since these are the properties of the low profile additive defined in the specification, these are the properties of the low profile additive in both the first and second thermosetting resin composition of claim 1. Accordingly, these claims are considered clear when read in conjunction with the specification, as required (see, for example, *Miles Laboratories Inc. v. Shandon Inc.,* 27 USPQ 2d 1123 at 1126 (CAFC 1993)). However, due consideration would be given to a suggestion from the Examiner, if it were considered necessary to amend the claim.

Claims 8, 26, 45, 52 and 59 are rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed.

The specification discloses that desired scratch resistance is "usually about 2.5 Newtons or higher". See, for example, page 6, lines 8-11. Accordingly, the recitation in the claims of "at least about 2.5 Newtons" would mean about 2.5 Newtons or higher based on the specification. Thus, these claims are considered clear when read in conjunction with the specification, as required. An amendment of these claims to instead recite "about 2.5 Newtons or higher" would be considered since it is not deemed

to narrow the scope of the claim. However, applicants are generally reluctant to amend the claims where it is unnecessary, because of the possible limitations on the Doctrine of Equivalents resulting from the Federal Circuit's decision in *Festo.*

II. Rejections Under 35 USC 102

Claims 9, 20-22, 27-29, 33-35, 40-44 and 47 are rejected under 35 USC 102(e) as allegedly being anticipated by Magnin. Claims 9, 20-22 and 47 are rejected under 35 USC 102(b) as allegedly being anticipated by Gerber. Claims 9, 20, 40, 42 and 47 are rejected under 35 USC 102(b) as allegedly being anticipated by Portelli. These rejections are traversed with respect to the pending claims which are the subject of these rejections.

None of the cited references teaches or suggests the synthetic resin film of claim 9 which is made using two impregnation steps with an intermediate drying step. It is necessary for the Examiner to provide "a rationale tending to show that the claimed product" is the same as or similar to the prior art. MPEP 2113. The Examiner has provided no such rationale. Indeed, there is no basis providing such rationale.

Additionally, with respect to Gerber, it is submitted that it does not even teach impregnating the composition. Gerber merely discloses that its composition is "useful in" "impregnated paper for use as auto oil and air filters." Col. 14, ll. 51-61. This does not teach that the Gerber composition is impregnated in the paper. The composition could be added to already impregnated paper.

Regarding Portelli, it is disputed that its resin particles which may be formed by spraying inherently results in their being substantially spherical particles, as set forth in the Office Action on page 5.

In accordance with the above discussion, it is submitted that claim 9 and claims 27-29 and 33-35 which depend from claim 9 overcome rejection and withdrawal of these rejections is requested.

III. Rejections under 35 USC 103(a)

First, there are two discussions requiring consideration in these rejections. The first involves a new Rule 132 Declaration submitted herewith and the second further explains the differences between scratch resistance and abrasion/wear resistance.

III.A. New Rule 132 Declaration

To further support the showing of unexpected advantages obtained by the claimed invention, submitted herewith is a second Rule 132 Declaration. The Declaration provides a direct comparison between sample films with (substantially) spherical particles and comparison sample films with non-spherical particles. Additionally, the shape of the particles is the only difference between the samples of the invention and the comparison samples.

The results shown in the Declaration demonstrate that higher levels of scratch resistance are obtained when using a (substantially) spherical particle instead of a non-spherical particle. The Declaration includes examples of particles of either alumina or polyethylene. It is entirely unexpected that scratch resistance would be influenced by the spherical nature of the particles in an impregnated resin because this effect of spherical particles in an impregnated resin is not known and not suggested by the references of record, as will be further explained herein.

Also, the increased levels of scratch resistance obtained with the spherical particles according to the invention are significant. Scratch resistance has been defined as having four different levels; level 1 $\geq$1.5N, level 2 $\geq$1.75N, level 3 $\geq$2.0N and level 4 $\geq$3.0N. See the enclosed copy of "Decorative high-pressure laminates (HPL) – Sheets based on thermosetting resins", Part 1. Specifications, BSI Standards, 1991, page 6 (hereinafter "Deco Part 1"). Accordingly, the increase in scratch resistance realized by the claimed invention is significant especially because it is an increase from level 3 to level 4.

Specifically, as shown in table 1 of the declaration, sample 1 of the invention has a scratch resistance of 3.0 Newtons (N) with spherical particles (level 4), while its comparison example, sample 2, only realizes a scratch resistance of 2.5N (level 3). Sample 3 of the invention has a scratch resistance of 3.5 N with spherical particles (level 4), while its comparison example, sample 4, only realizes a scratch resistance of 2.5N (level 3). Also, as shown in table 2 of the declaration, sample 5 of the invention has a scratch resistance of 3.5N with spherical particles (level 4), while its comparison example, sample 6, only realizes a scratch resistance of 2.5N (level 3).

III.B. Scratch Resistance v. Abrasion/Wear Resistance

Scratch resistance and abrasion/wear resistance are distinctly different properties of laminates. The terms are not closely related or often used interchangeably in the art, contrary to the statement in the present Action. Page 20. Takahashi does confuse these terms, but Takahashi is only one reference. It is not considered that a one time mistake qualifies as "often." More importantly, Albrinck, which is also cited by the Examiner, does not confuse these terms and discloses different tests for scratch and abrasion/wear resistance as discussed below.

There are different standard tests for scratch resistance and abrasion/wear resistance which are discussed immediately below.

III.B.1. U.S. Standards

The National Electrical Manufacturers Association (NEMA) publishes a set of standards for laminates, approved by ANSI, which includes test methods for scratch resistance and abrasion/wear resistance. These are the U.S. standards. A copy of NEMA Standards Publication LD 3-1995, High-pressure decorative laminates, 1995, pgs. ii-iii, 3-13 – 3-19 and 3-36 – 3-39, is enclosed for the Examiner's convenience (hereinafter "NEMA"). The test methods demonstrate that the terms scratch resistance and abrasion/wear resistance are not closely related and that the skilled artisan would not be expected to use these terms interchangeably. The different test methods also

show that if the terms were incorrectly used interchangeably, as in Takahashi, the skilled artisan would know that it was wrong.

III.B.1.a. NEMA Scratch Resistance

According to NEMA, the scratch resistance test measures "the ability of the surface of a high-pressure decorative laminate (HPDL) to resist scratching by a material of similar sharpness and hardness to silica." NEMA at 3-13. The testing apparatus with a special "scratch tool fixture" is shown in figure 3-3 (NEMA at 3-13) and additional detail on the apparatus is shown in figures 3-4 and 3-5 (NEMA at 3-14 and 3-15). Also, a special viewing enclosure is shown in figures 3-6 - 3-8 (NEMA at 3-16 – 3-17). The test specimens (requiring a specified thickness) and test procedure are described (NEMA 3-18 – 3-19).

The NEMA test procedure for scratch resistance involves scratching a laminate with the weighted down undamaged corner of a glass slide. Several scratches are made, each with a different weight. The scratches are then viewed and graded. NEMA at 3-18 and 3-19.

III.B.1.b. NEMA Abrasion/Wear Resistance

In contrast to scratch resistance, according to NEMA, the wear resistance test measures "the ability of the surface of high-pressure decorative laminate (HPDL) to resist abrasive wear-through of the decorative layer." NEMA at 3-36. Wear resistance is also known as abrasion resistance because it is a resistance to abrasion.

The testing apparatus includes an abrading machine and wheels which are covered with sandpaper strips during use. NEMA at 3-36 – 3-37. The specimen has a hole in the center for attachment to the turntable of the abrader machine. NEMA at 3-37 – 3-38.

The NEMA test procedure for wear resistance involves abrading a specimen with sandpaper as it revolves on a turntable. The specimen is inspected every 25 revolutions

until it reaches a point where it is worn to a specified extent (the initial wear point). Then, abrasion is continued to determine the number of revolutions until the specimen is worn even more (to a specified extent); this is the final wear point. NEMA at 3-38.

III.B.2. European Standards

A European standard (EN) is used outside the U.S. and even in Canada, where the research was conducted for the present application. This standard is shown in "Decorative high-pressure laminates (HPL) – Sheets based on thermosetting resins", Part 2. Determination of Properties, BSI Standards, 1991, pgs. 3, 5, 13, 14, 27 and 34 (hereinafter "Deco Part 2"), a copy of which is enclosed for convenience. The different European test methods for scratch and abrasion resistance further demonstrate that these properties are not closely related and that the terms scratch and abrasion/wear resistance are not used interchangeably.

III.B.2.a. European Standard Scratch Resistance

The resistance to scratching is measured using a diamond scratching point. The test specimen is rotated while the diamond scratching point is applied and a determination is made of the minimum load applied to the diamond which produces a visible scratch. Deco Part 2 pages 13-14. The apparatus is shown on page 34 of Deco Part 2.

This standard is used to measure scratch resistance in the present application. See page 8 of the specification.

III.B.2.b. European Standard Wear Resistance

This test measures resistance to abrasive wear. The resistance is measured by subjecting the specimen to rotating sandpaper covered wheels as the specimen revolves on the testing machine. This is similar to the NEMA test described above. Deco Part 2 page 3. The apparatus is shown on page 27of Deco Part 2.

In addition to the different test methods showing scratch resistance and abrasion/wear resistance are different properties, it is also mentioned that Deco Part 1 identifies resistance to wear and scratching as different properties characteristic of decorative laminated sheets, along with the properties of resistance to impact, boiling water, domestic stains and moderate heat. Deco Part 1, page 4, first column. None of these terms are interchangeable. Also, there are different index (classification) numbers for scratch and wear resistance, Deco Part 1, page 4, second column; mention is made of decorative laminated sheets that have low resistance to surface wear, yet moderate resistance to scratching, Deco Part 1, page 5, Table 1, row 7; and further that resistance to surface wear and resistance to scratching are identified as two different properties for decorative laminated sheets in Table 7, rows 1 and 9, respectively, on Deco Part 1, page 7. accordingly, it is submitted that the skilled artisan would understand that scratch resistance and abrasion/wear resistance are different properties of laminates. Even a lay person would see the difference between making lines in a surface by scratching and rubbing away the surface through abrasion.

III.B.3. Albrinck Discloses Different Test Methods For Scratch And Abrasion Resistance

Albrinck measures scratch resistance using the edge of a glass microscope slide. Col. 7,ll. 32-62. This is the NEMA test method described above. The scratches are characterized as very thin lines. Col. 7, ll. 36-38. In contrast, Albrinck measures abrasion resistance by subjecting the surface of a laminate to abrasion by sandpaper for a fixed number of cycles. The abrasion resistance is determined by measuring the depth of the groove resulting from the application of the sandpaper. Col. 8, ll. 52-62.

Since the Albrinck reference has been cited in this case, the record in the present application clearly distinguishes the properties of scratch and abrasion resistance.

III.B.4. Takahashi's Disclosure Only Shows Abrasion Resistance

Takahashi mistakenly refers to abrasion resistance and scratch resistance interchangeably. However, it only discloses a test method for determining abrasion resistance and the results thereof. This, together with the above showing that these are

known as distinct properties, demonstrates that Takahashi would only teach the skilled artisan that its decorative material has abrasion resistance, not scratch resistance.

The abrasion resistant test in Takahashi is "carried out in accordance with JIS K6902." Col. 7, ll. 44-45. Presumably, this is a Japanese standard which would not contribute to the present discussion since it would be in Japanese, not English. The test in Takahashi abrades the surface of the decorative material until only half the resin layer remains. Col. 7, ll. 44-47 and see Table 1 in col. 8. It thus wears away the surface as opposed to scratching it.

Also in Takahashi, the abrasion loss for the examples was determined after 200 revolutions. This abrasion loss was measured in how many milligrams of coating layer was removed. See, for example, an abrasion loss of 30 mg, col. 12, ll. 26-29, an abrasion loss of 25 mg, col. 12, ll. 64-67 and an abrasion loss of 30 mg, col. 12, ll. 26-29. In the comparative examples, the abrasion test resulted in the coating layer being completely worn away. Col. 14, ll. 1-5, 22-25 and 44-47.

The skilled artisan reading Takahashi would, thus, understand that it refers to abrasion resistance and not scratch resistance.

III.C.1. First Rejection Under 35 USC 103(a)

Claims 1-9, 11-12, 16, 20-22, 26-29, 33-35 and 39-61 are rejected under 35 USC 103(a) as allegedly being unpatentable over Albrinck in view of Takahashi and further in view of allegedly admitted prior art. This rejection is respectfully traversed with respect to the pending claims.

In summary, Takahashi teaches preventing penetration/impregnation of its abrasion-resistant resin layer and, thus, (1) teaches away from the impregnation method of the claimed invention, (2) only teaches any benefits of spherical particles in a surface resin layer, and (3) is not combinable with Albrinck which impregnates the resin.

TAKAHASHI TEACHES AWAY FROM THE CLAIMED INVENTION

In complete contrast to the impregnation of resin in the claimed invention, Takahashi teaches **"fully prevent[ing]"** the resin from going through the substrate so that the abrasion-resistant layer can be formed "on the surface" of the substrate. Col. 10, ll. 26-32. The teaching of Takahashi taken as a whole is for the abrasion-resistant layer to remain on the surface of the substrate and not be impregnated therein. See, for example, Takahashi's identification of its resin layer as an **"overcoat",** col. 1, l. 31, its description of its resin layer as a coating layer formed **"thereon",** col. 1, l. 48 and col. 10, l. 59, or **"on top",** col. 11, l.28. Also, when the substrate is one that the coating "does not penetrate", Takahashi does not care about the coating method. Col. 9, ll. 19-29. Clearly, Takahashi teaches away from the claimed invention and does not teach employing the method of impregnation to apply its resin layer.

NO EXPECTATION OF SUCCESS

There is no expectation based on Takahashi that spherical particles would impart advantages when part of an impregnated resin, as opposed to Takahashi's surface resin layer. Takahashi only teaches applying its abrasion-resistant resin layer (containing spherical particles) to the surface of a substrate, as discussed above. Takahashi does not teach or suggest impregnating the substrate with its abrasion-resistant resin layer. Indeed, it is critical in Takahashi to obtaining abrasion resistant properties that the relationship between the thickness of the coating layer and the average particle diameter be strictly controlled by the formula: $0.3t \leq d \leq 3.0t$ (where "t" is the average thickness of the coating layer and "d" is the average particle diameter of the spherical particles). See the abstract, for example.

TAKAHASHI AND ALBRINCK CANNOT BE COMBINED

Albrinck is cited for impregnating a substrate with a resin containing abrasion resistant particles. See page 6 of the Office Action. Takahashi is cited for disclosing an additive of spherical particles for abrasion resistance. See pages 8-9 of the Action. It is contended in the Office Action that it would be obvious to include Takahashi's spherical abrasion resistant particles to obtain abrasion resistance in Albrinck's decorative

laminate. See page 9 of the Action. However, the skilled artisan would not combine these references since Albrinck's method impregnates the resin, while Takahashi's method is directed to coating a surface and avoiding impregnation. Takahashi simply does not disclose impregnating its compositions. There is, thus, no suggestion to modify Albrinck using Takahashi's particle, since there is no expectation, based on Takahashi, that the particles are effective when impregnated, as opposed to when they are in a surface layer. See MPEP 2141.02, 2142, 2143, 2143.01 and 2143.02.

UNEXPECTED RESULTS

Takahashi teaches away from impregnation. However, even if a prima facie case of obviousness were established, it would be overcome by unexpected results, as shown in the examples and comparative examples submitted in this case. See, particularly, the above discussion of the Rule 132 Declaration accompanying this response.

Takahashi refers to abrasion resistance, not scratch resistance, based on the testing methods disclosed therein, as discussed above. The terms abrasion resistance and scratch resistance are not interchangeable, as shown above, even though Takahashi mistakenly equates them. Further, even if Takahashi is deemed to teach improved scratch resistance, it would only teach it for a surface coating, so it would be unexpected to get good results in an impregnated coating.

Thus, in accordance with the above discussion, Takahashi teaches preventing penetration/impregnation of its abrasion-resistant resin layer and, thus, (1) teaches away from the impregnation method of the claimed invention, (2) only teaches any benefits of spherical particles in a surface resin layer, and (3) is not combinable with Albrinck which impregnates the resin. Also, Takahashi specifically teaches away from claim 48 and dependent claims 49-54 which have less than 5% particles. Takahashi teaches scratch resistance is insufficient if the amount of particles is less than 5% by weight, as stated in the Office Action bottom of page 8. Col. 3, ll. 34-36.

In addition to the above, it is noted that the particles in Takahashi are made of resin, as stated on page 9 of the Action. See Takahashi, col. 4, ll. 16-28. It is not understood how these resin particles meet the qualifications of the claimed low profile additive. Albrinck's polyethylene wax cannot meet these qualifications either, since it teaches use of the wax is undesirable because it results in haze and blur. Col. 5, ll. 39-43 and page 7 of the Action.

III.C.2. Second Rejection under 35 USC 103(a)

Claims 1-9, 11-12, 16, 20-22, 26-29, 33-35 and 39-61 are rejected under 35 USC 103(a) as being unpatentable over Albrinck in view of 3M and Zeelan and further in view of allegedly admitted prior art. This rejection is respectfully traversed.

The rejection is in error at least because of the unexpected existence and magnitude of scratch resistant properties of the claimed invention which rebut any possible prima facie case of obviousness.

To reiterate, Albrinck is cited for disclosing a method of producing a decorative laminate by "impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles", which are "preferably alumina." Action, page 10. The Examiner admits that Albrinck does not disclose that the abrasion resistant particles (alumina) are microspheres. Action page 12. Also, Albrinck does not teach that its particles are substantially spherical.

3M and Zeelan is relied on for disclosing ceramic microspheres. The Examiner contends it is obvious to utilize 3M and Zeelan's microspheres instead of Albrinck's abrasion resistant particles in Albrinck's invention because 3M and Zeelan teaches its ceramic microspheres impart advantages, including abrasion resistance. Action pages 12-13.

However, 3M and Zeelan does not teach or suggest its microspheres could be used in a decorative laminate or that they could be used to improve scratch resistance.

Accordingly, it is entirely unexpected that the claimed invention increases scratch resistance and that this increase is substantial. Also, there is no reason to think that that the 3M and Zeelan microspheres could be used in Albrinck's composition.

UNEXPECTED RESULTS REBUT ANY PRIMA FACIE CASE OF OBVIOUSNESS

It is unexpected that the claimed invention improves scratch resistance and realizes such a high level of improvement.

3M and Zeelan does not teach or suggest that its microspheres could be used to improve scratch resistance. It does indicate that its microspheres could be used to improve abrasion resistance.

Abrasion resistance is very different from scratch resistance, as discussed above. The difference between abrasion resistance and scratch resistance is demonstrated by the different testing methods they use. Abrasion resistance refers to the overall wear that the surface can take. It is, thus, tested by abrading the surface with sandpaper and determining how much of the surface is worn away. See, for example, The NEMA and European standards discussed above and Albrinck, col. 8, l. 52-62. On the other hand, scratch resistance relates to the ability of the surface of the laminate to withstand a hard, sharp instrument concentrated in one area of the surface. See the NEMA and European standards discussed above. Albrinck uses glass to test scratch resistance, col. 7, l. 32-62, while the present applicants used diamond. See page 8 of the specification.

The difference is also demonstrated by the examples of record which show that irregularly shaped alumina, which is known to improve abrasion resistance (see Takahashi and Albrinck) has a negative effect or no effect at all on scratch resistance. See Table A on page 2 of the Rule 132 Declaration ("Declaration") submitted with the Amendment of November 8, 2000, in response to the Action of August 2000.

3M and Zeelan does not teach or suggest that its microspheres could be used to improve scratch resistance. It is, thus, submitted that there is no reason based on the references to expect that spherical particles would increase scratch resistance, let alone increase it such a great amount, as shown in the accompanying Rule 132 Declaration and the examples and comparative examples previously submitted.

The unexpected results achieved by the claimed invention effectively rebut any prima facie case of obviousness. It is, however, submitted that a prima facie case of obviousness has not been established because 3M and Zeelan do not teach or suggest that its ceramic microspheres could even be used in a composition for a decorative laminate, such as Albrinck's. Thus, there is no suggestion to modify Albrinck to utilize 3M and Zeelan's microspheres, as is required to establish a prima facie case of obviousness.

III.C.3. Other Rejections Under 35 USC 103(a)

Claims 4-5 are rejected under 35 USC 103(a) as allegedly being unpatentable over Albrinck in view of Ungar. Claims 4-5 are rejected under 35 USC 103(a) as allegedly being unpatentable over Albrinck in view of Kuehnle. Claims 4-5 are rejected under 35 USC 103(a) as allegedly being unpatentable over Albrinck in view of O'Dell. These rejections are traversed.

Any prima facie case of obviousness is overcome by the unexpected results shown in the accompanying Rule 132 Declaration. The cited references provide no expectation of improved scratch resistance when employing a low profile additive in accordance with the claimed invention.

It is, however, questionable whether a prima facie case of obviousness has been established. There can be no suggestion to modify Albrinck with the wax of Ungar, Kuehnle or O'Dell, because Albrinck specifically teaches that poor results (haze and blur) are realized when wax is used in its process (col. 5, ll. 39-43). This is stated in the Office Action on pages 13, 15 and 16. Also, it is not clear whether these references

disclose the claimed impregnation of a low profile additive as defined in the specification ("inert, substantially spherical particles having a particle size in the range of about 5 to about 60 microns"). For example, Kuehnle does not disclose impregnating a resin or that its particles are substantially spherical (col. 1, ll.50-52, col. 3, ll. 15-18 and 37-42); in O'Dell, the coating with wax is applied to the face of the décor paper and is not part of the impregnated composition (see the abstract); and Ungar's wax migrates, making it not inert. See page 14 of the Action. (Ungar also teaches away from the claimed two-step coating, col. 13, ll. 5-14). However, even if a prima facie case of obviousness were established, it would be overcome by unexpected results. See the accompanying Rule 132 Declaration and the examples and comparative examples submitted in this application.

In accordance with the above discussion, it is respectfully submitted that the claims overcome the rejections and it is thus requested that the rejections be withdrawn.

Claims 1-9, 11, 12, 16, 26-29, 33-35, 39, 45, 46 and 48-61 should be allowable and notice to that effect is earnestly solicited.

Respectfully submitted,

Lainie E. Parker
Reg. No. 36,123
Attorney for Applicant

Akzo Nobel Inc.
Intellectual Property Dept.
7 Livingstone Avenue
Dobbs Ferry, NY 10522-3408
(914) 674-5466

Enclosures: Rule 132 Declaration; "Decorative high-pressure laminates (HPL) – Sheets based on thermosetting resins", Part 1. Specifications, BSI Standards, 1991, pgs. 3-5, 8 and 9; "Decorative high-pressure laminates (HPL) – Sheets based on thermosetting resins", Part 2. Determination of Properties, BSI Standards, 1991, pgs. 3, 5, 13, 14, 27 and 34; NEMA Standards Publication LD 3-1995, High-pressure decorative laminates, 1995, pgs. ii-iii, 3-13 – 3-19 and 3-36 – 3-39.